STATUS REPORT ON THE REVIEW OF THE CRANDON MINE: April 1999

Department of Natural Resources
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What's New With DNR's Review of the Crandon Project?

- **The DNR has received Nicolet Mineral Company's proposed project changes**
- **The DNR is beginning the verification process for the proposed Mining Moratorium Law candidate sites**
- **The DNR is addressing questions about the Mining Moratorium Law**
- **The DNR is progressing on groundwater modeling work**
- **The DNR is reviewing Nicolet Mineral Company's monitoring plan**

The DNR has received Nicolet Mineral Company's proposed project changes

Last fall and early this year the Nicolet Minerals Company took a major step toward completing its planning and design changes for the proposed Crandon mining project. As a result, the company has re-submitted to the DNR its revised permit applications and project plans for our review. The revised permit applications and plans prepared by Nicolet Minerals Company identify the project changes that would be implemented if the project ultimately were approved. While we anticipate there may be a number of small, additional changes that the company will make during our review of the proposal, and the company still needs to submit results of some important ongoing studies, here is an overview of the five main proposed project changes:

- Treated wastewater would be discharged to an on-site soil absorption system (SAS) rather than be pumped via pipeline for discharge to the Wisconsin River. In a letter to the Department dated March 25, 1999, the company confirmed that it would not be proposing the pipeline to the Wisconsin River. On-site management of the wastewater would avoid the controversial inter-basin transfer of water that would result if discharge to the Wisconsin River were used.

  Treated water to be discharged to a soil absorption system must meet effluent limits that comply with groundwater standards. In general these limits are more stringent than effluent limits set for discharges to most surface waters. In order to meet these more stringent effluent limits, the company has proposed an advanced treatment plant design. Wastewater treatment would include metals precipitation followed by two passes through a reverse osmosis system. Reject water from the reverse osmosis process would be evaporated and the resulting brine would be incorporated into the mine backfill.

- Pyrite (a mineral composed of the elements iron and sulfur), the main acid producing mineral in the waste tailings, would be separated from the tailings in a process similar to how the zinc, copper and lead minerals would be separated. Pyrite would then be placed

with cement in the underground mine cavities, where it would be subjected to limited oxidation, and resulting acid production would be minimized.

- The low-pyrite tailings would be disposed in the surface tailings management area (TMA). If necessary, limestone would be added to minimize the potential for acid production in the tailings.

- By placing the pyrite underground, the required disposal volume in the tailings management area would be significantly reduced. As a result, the "footprint" of the proposed TMA has been reduced in size and moved further away from the nearby bur oak swamp.

- Bedrock over the ore body would be intensively grouted to reduce the inflow of water into the mine and, if successful, would reduce potential impacts to lakes, streams, springs and wetlands near the ore body. Nevertheless, the company has still developed a Surface Water Mitigation Plan, which describes how stream flows and lake levels will be maintained if the project causes unacceptable impacts.

The following documents submitted by the Nicolet Minerals Company have incorporated the above project changes:

Mining Permit Application - replaces the 1995 mining permit application (contains the mining plan, environmental monitoring plan, reclamation plan and risk assessment).

Air Pollution Control Permit Application - replaces the 1995 air pollution control permit application.

Preliminary Engineering Report for Wastewater Treatment Facilities - replaces the original document and describes the proposed soil absorption site.

Addendum 5 to the Tailings Management Area Feasibility Report - describes changes proposed for the TMA design and location.

Environmental Impact Report - Volumes I, II and IIa replace the previous Volumes I and II and describe in detail the proposed project, existing environmental conditions and the company's evaluation of impacts.

Notice of Intent for Storm Water Discharge - replaces the previous document with the same title.

Chapter 30 Permit Applications - revised documents replace the previous permit applications for stream crossings and structures needed near lakes and streams.

Wisconsin Pollutant Discharge Elimination System Permit Application - replaces the original permit application with the same name; requests approval for the discharge to

groundwater at the soil absorption site and the surface water discharges into water bodies requiring surface water mitigation.

Surface Water Mitigation Plan - replaces the draft plan on how public rights in surface waters would be protected.

Section 404 Permit Application - required by the U.S. Army Corps of Engineers for wetland dredging and filling.

High Capacity Well Permit Application - replaces the initial permit application for pumping the mine and evaluates impacts on private water wells.

The company has placed its revised documents in many public libraries and mailed them to key tribal, municipal and agency representatives for review. The libraries where Nicolet Minerals Company documents have been placed include the Brown County Library in Green Bay, Marathon County Public Library in Wausau, the public libraries in Crandon, Madison, Milwaukee and Tomahawk, the University of Wisconsin-Madison Wendt Engineering library, and the UW-Stevens Point Learning Resource Center. Besides being available at DNR offices in Madison and Rhinelander, the company's documents also have been sent to representatives of the Towns of Ainsworth, Crandon, Lincoln and Nashville, the Cities of Antigo and Crandon, and Forest, Langlade and Oneida Counties for public review.

The DNR is beginning the verification process for the proposed Mining Moratorium Law candidate mines

Early this year the Nicolet Minerals Company submitted to us the names of three candidate mines it believes fulfill the requirements of the so-called mining moratorium law:

The **McLaughlin Mine** near San Francisco, California, is owned and operated by Homestake Mining Company. This open pit gold mine began operations in 1983 and is still producing today. It was submitted as a candidate mine to meet the law's 10-year "operating" criterion.

The **Cullaton Lake Mine**, located in Canada's newly created Nunavut Territory (formerly part of the Northwest Territories), is presently owned by Homestake Canada, Inc., of Vancouver. It was an underground gold mine that was developed and operated between 1976 and 1985. It was submitted as a candidate mine that meets the 10-year "closure" criterion.

The third candidate mine is the **Sacaton Mine** near Casa Grande, Arizona. It is owned and was operated by ASARCO of New York. It was an open pit copper mine operated from 1972 until its closure in 1984. It was submitted in fulfillment of both the operating and closure requirements in the moratorium law.

We have started our review and verification activities to determine the accuracy, adequacy and completeness of the information on the candidate mines. Over the next several months we will meet with regulators in Arizona, California and Canada, review their files on the mines to verify that we have all the appropriate information on the candidate sites, and visit the three mines. We

welcome any documented information that the public might have on the candidate sites, and we will include it in our summary of findings.

When our review is complete we will develop a recommendation on whether or not the candidate mines meet the moratorium requirements. That recommendation will be presented at the same time the Department submits to an administrative law judge its recommendations on Nicolet's application for a mining permit, as well as all other Department permits, approvals, licenses and the Final Environmental Impact Statement. In the meantime, the Department will provide information on the status of our review and verification efforts in the Draft and Final Environmental Impact Statements.

The DNR is addressing questions about the Mining Moratorium Law

Judging by the number of questions we have received via letters and phone calls, there is a lot of public interest in - and concern about - the Mining Moratorium Law. Therefore, we have reproduced a number of frequently asked mining moratorium questions and provided our responses.

Question: *Does one candidate mine have to meet both the 10-year closure requirement and the 10-year operations requirement in order to qualify?*

Answer: The law requires a mining permit applicant to identify "a mining operation" that meets the 10-year operations requirement. In a separate paragraph of the law, the mining permit applicant is required to identify "a mining operation" that meets the 10-year closure requirement without causing pollution. The law is silent on whether a single mine must meet both criteria. Our interpretation, based on the wording in the law, is that the above criteria could be satisfied by a single example or separate mines.

Question: *One of the company's candidate mines is located in an area of permafrost, another in Arizona, an arid region. How can these sites be considered comparable to the proposed Crandon site?*

Answer: The Legislature examined the concept of mine comparability and decided to provide just two criteria for which the candidate mines had to be similar to the proposed Crandon Mine. First, the example mines have to be in a sulfide ore body;and second, the ore body together with the host rock must have a net acid generating potential. Candidate mines are not required by the moratorium law to meet any other "comparability" criteria, although they must be located in the United States or Canada.

Question: *Why doesn't the Department stop its review of the proposed mine until the review of the candidate mines has been completed?*

Answer: The Legislature established the mining moratorium approval process to coincide with the existing approval process for all of the other mining permitting criteria. Before the decision-maker can issue the mining permit, there must be compliance with all mining rules, including the mining moratorium provisions. Compliance or non-compliance with the moratorium criteria, and

with all other applicable rules and regulations, is judged at the end of the process, when all the information has been generated and evaluated.

Question: *Why doesn't the Department write administrative rules to clarify and implement the mining moratorium?*

Answer: The Mining Moratorium Law was one of the most vigorously debated pieces of legislation in many years. The end product reflects the depth of the discussion the legislature had on this issue, and reflects numerous changes to deal with the concerns raised by many parties, including the Department.
The Department generally adopts administrative rules either when directed to do so by the Legislature, or when its technical expertise is necessary to "flesh out" legislation that needs to be regularly and consistently applied to complex programs that directly affect many individuals or companies.

The existing laws which govern mining in Wisconsin contain a section specifically listing a number of subjects about which the Department must adopt administrative rules. The Legislature did not include the mining moratorium law in that section. <
We have received comments from several individuals inquiring about writing rules for the moratorium law. Recently the Natural Resources Board, the Department's policy-making body, received a petition requesting that we write such rules. The Department will make a recommendation on this petition to the Natural Resources Board within several months.

Question: *What exactly does the Mining Moratorium Law say?*

Answer: Most people who contact the Department have not seen the actual wording of the Mining Moratorium Law. Because the wording of any law determines how the Department interprets the law, we have reproduced the mining moratorium law in its entirety, exactly as written and passed by the Legislature and signed by the Governor.

1997 Wisconsin Act (1997 Senate Bill 3)

An Act to *amend* 193.49(1)(1a)(intro.); and to create 293.50 of the statutes; relating to: issuance of metallic mining permits for the mining of sulfide ore bodies. The people of the state of Wisconsin, represented in senate and assembly, do enact as follows:

Section 1. 293.49 (1)(a)(intro.) of the statutes is amended to read:
293.49 (1)(a)(intro.) Except as provided in sub. (2) and s. 293.50 and except with respect to property specified in s. 41.41 (11), within 90 days of the completion of the public hearing record, the department shall issue the mining permit if it finds:

Section 2. 293.50 of the statutes is created to read: **293.50 Moratorium on issuance of permits for mining of sulfide ore bodies.**

(1) In this section:

(a) "Pollution" means degradation that results in any violation of any environmental law as determined by an administrative proceeding, civil action, criminal action or other legal proceeding. For the purpose of this paragraph, issuance of an order or acceptance of an agreement requiring corrective action or a stipulated fine, forfeiture or other penalty is considered a determination of a violation, regardless of whether there is a finding or admission of liability.

(b) "Sulfide ore body" means a mineral deposit in which metals are mixed with sulfide minerals.

(2) Beginning on May 7, 1998, the department may not issue a permit under s. 293.49 for the mining of a sulfide ore body until all of the following conditions are satisfied:

(a) The department determines, based on information provided by an applicant for a permit under s. 293.49 and verified by the department, that a mining operation has operated in a sulfide ore body which, together with the host rock, has a net acid generating potential in the United States or Canada for at least 10 years without the pollution of groundwater or surface water from acid drainage at the tailings site or at the mine site or from the release of heavy metals.

(b) The department determines, based on information provided by an applicant for a permit under s. 293.49 and verified by the department, that a mining operation that operated in a sulfide ore body which, together with the host rock, has a net acid generating potential in the United States or Canada has been closed for at least 10 years without the pollution of groundwater or surface water from acid drainage at the tailings site or at the mine site or from the release of heavy metals.

(2m)

(a) The department may not base its determination under sub. (2) (a) or (b) on any mining operation that has been listed on the national priorities list under 42 USC 9605 (a) (8) (B) or any mining operation for which the operator is no longer in business and has no successor that may be liable for any contamination from the mining operation and for which there are no other persons that may be liable for any contamination from the mining operation.

(b) The department may not base its determination under sub. (2) (a) or (b) on a mining operation unless the department determines, based on relevant data from groundwater or surface water monitoring, that the mining operation has not caused significant environmental pollution, as defined in s. 293.01 (4), from acid drainage at the tailings site or at the mine site or from the release of heavy metals.

(3) This section applies without regard to the date of submission of the permit application.

The DNR is progressing on groundwater modeling work

The Department is continuing to develop the computerized groundwater flow model. The model will be a tool to help us evaluate the extent and degree of groundwater drawdown around the mine and to assist in our evaluation of impacts to lakes and streams near the proposed mine. The flow model also will provide the basis for the next model - the solute transport model - that will be used in our evaluation of groundwater quality impacts from the tailings management area and the abandoned, reflooded mine.

We have obtained all of the company's flow model inputs and its program and continue to review and evaluate what the company developed over the past several years. In addition, we will change certain portions of the model to what we believe more accurately reflects the natural groundwater system. When we finish, the groundwater flow model will be somewhat different from the final model submitted by the company.

Over the next several months we and our consultants expect to make the final changes to our flow model, verify its calibration (its ability to accurately mimic known conditions and known data), and run several impact scenarios. The impact scenarios will assume the mine is permitted and operating, and will allow us to examine likely impacts and reasonable worst case impacts.

Can the groundwater models accurately predict the nature of the groundwater impacts that would occur should the mine be built and operated? The models, which must greatly simplify the complex natural hydrologic systems, do not have the capability to accurately predict the exact impacts should the mine be built. There will be differences between our predictions and the actual impacts to the groundwater. However, we look at the models as being the best tools we have for helping us make groundwater quantity and quality predictions. The models will allow us to look at the range of possible groundwater impacts, and if the models are properly and conservatively developed, we expect them to come reasonably close to predicting what actually would occur.

How can DNR protect water quality and flow volumes in the absence of an accurate groundwater model? As stated above, the models are tools to help us predict the impacts caused by the project. If the project is developed, a key element in protecting water quality and quantity would be the ability to effectively monitor the actual impacts. To that end, the Department has required the company to develop a comprehensive environmental monitoring program. If, during operation, the monitoring program identifies impacts greater than those predicted, or that could violate some environmental protection standards if not corrected, then the mining company would have to implement the appropriate section of a Department-approved contingency plan. The process of assessing impacts to groundwater and surface waters involves prediction, planning, monitoring, and lastly, enforcement.

The DNR is reviewing Nicolet Mineral Company's monitoring plan

The company's proposed environmental monitoring plan is a very important element of the proposed mining project. It identifies all of the environmental monitoring that would take place

before and during construction, during operations, following closure and for the long-term care period, assuming the project is approved and built. If the monitoring plan is designed and implemented properly, it should alert us to the first signs of any environmental pollution resulting from the project.

The environmental monitoring plan is important because it will be used to demonstrate whether each facility at the proposed project is continuing to conform to all environmental protection requirements. There will be specific monitoring identified for the mine/mill, for the tailings management area, the soil absorption system, and pipelines. Here are the general types of monitoring that would be covered by the environmental monitoring plan and other permits:

- Groundwater Levels and Quality
- Drinking Water Well Monitoring
- Surface Water Levels, Flow and Quality in Lakes, Streams and Springs
- Air Quality and Meteorology
- Terrestrial Ecology
- Aquatic Biology
- Wetlands
- TMA Tailings and Leachate
- Mine Inflow
- Treated Wastewater

In addition, there would be monitoring of critical construction work conducted at the site. For example, detailed quality control inspections would be conducted during construction of lined facilities to ensure the liner material and installation procedures meet specified standards. The concept behind monitoring is to design the monitoring network so that potential pollution can be detected and the problem remedied before it becomes significant.

The environmental monitoring plan is linked closely to the company's contingency plan. The contingency plan identifies the steps to be taken should environmental monitoring indicate that unexpected impacts are occurring or that impacts are greater than predicted.

The company's environmental monitoring plan is part of its Mine Permit Application. It is being reviewed now by the Department and it will be summarized in our Draft and Final Environmental Impact Statements. The final decision on its adequacy will be made after the Master Hearing by the administrative law judge, similar to how all of the final decisions will be made on the proposed project.

Other Mining News: The Science Advisory Council on Metallic Mining

In 1997 the Governor created the Wisconsin Science Advisory Council on Metallic Mining to advise the Department on technology that could prevent or eliminate environmental degradation due to mining projects. Specifically, the Council is required to review the technologies proposed by mining companies to evaluate whether they are adequate to reduce or eliminate environmental impacts from acid drainage or heavy metal pollution. The recommendations of the Council must

address whether the proposedtechnology would be capable of achieving compliance with groundwater and surface water standards.

The Council met numerous times in 1998 and 1999 to listen to presentations given by Department staff and the mining company, receive public input, and to participate in several field trips. One of the trips was to view reclaimed mine sites, one was to an operating underground mine, and one was to the project site of the proposed Nicolet Minerals Company mine near Crandon. The Council's final report to the agency will be incorporated in the Department's Environmental Impact Statement.

The text of the Governor's Executive Order, which created the council and prescibes its duties, is as follows:

Executive Order #309 Relating to the Creation of the Wisconsin Science Advisory Council on Metallic Mining

WHEREAS, Wisconsin has a well-established tradition and history of mining its metallic ore resources for the benefit of its citizens; and
WHEREAS, Wisconsin has an equally well-established tradition and history of protecting and preserving its environmental heritage; and
WHEREAS, mining of metallic ore reserves represents a significant economic opportunity in this state; and
WHEREAS, certain metallic mining practices have caused degradation of surface and ground water through acid drainage and the release of heavy metals; and
WHEREAS, technology has been advanced that promises to prevent or eliminate environmental pollution caused by the mining of metallic ore reserves; and
WHEREAS, the interests of the citizens of Wisconsin will best be served by basing decisions regarding metallic ore mining in this state on sound scientific principles;
NOW, THEREFORE, I, TOMMY G. THOMPSON, Governor of the State of Wisconsin, by the authority vested in me by the Constitution and laws of this State, and specifically by Section 14.019 of the Wisconsin Statutes, do hereby:
1. Create the Wisconsin Science Advisory Council on Metallic Mining (hereinafter "Council") and require the Council to perform the following substantive functions:

a. Identify the technologies that are effective in preventing or eliminating environmental degradation from metallic ore mining operations;

b. Review, on a site-specific basis, proposed metallic ore mining operations in this state and determine the effectiveness and feasibility of implementing technologies to reduce or eliminate environmental impacts, including acid drainage and the release of heavy metals from the tailings site, from the proposed metallic ore mining operations;

c. Formulate and submit recommendations to the Secretary of the Department of Natural Resources (hereinafter "Secretary") concerning the existence of technology that will ensure compliance with state groundwater and surface water statutes or rules by metallic ore mining operations and confirm that any proposed metallic ore mining operation would utilize these technologies.

2. Provide that the recommendations of the Council required in paragraph 1.c. shall be considered in state environmental impact statement preparation and permit decisions.

3. Provide that the Council shall be composed of five members who shall serve at the pleasure of the Secretary.

4. Provide that the Secretary shall appoint the members of the Council and shall designate a chair from such membership to serve in that capacity at the pleasure of the Secretary.

5. Provide that members of the Council must have training and experience in at least one of the following disciplines, each of which must be represented on the Council: geology or hydrology, environmental engineering, metallic ore mining, and environmental risk assessment and management.

6. Direct agencies of the State of Wisconsin to cooperate fully with the Council and provide assistance to the Council upon the request of the Secretary.

7. Direct the Department of Natural Resources to provide staff and other necessary support to the Council.

8. Require the Secretary to establish dates by which the Council must submit the recommendations required in paragraph 1.c.

9. Provide that the Council shall submit such information and reports to the Secretary as the Secretary directs.